



UNITED STATES PATENT AND TRADEMARK OFFICE

17A

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/713,192

11/17/2003

Won-Ho Lee

8733.971.00-US

9556

30827

7590

11/03/2006

MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER

QI, ZHI QIANG

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/713,192	Applicant(s) LEE, WON-HO	
	Examiner Mike Qi	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 5-6, 10-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,313,898 B1 (Numano et al) in view of US 5,995,176 (Sibahara).

Regarding claims 1-2, 5, 10-13 and 16, Numano teaches (col.16, line 3 – col.17, line 17; Figs. 21-23) that a multi-domain liquid crystal display comprising;

- first and second substrates (1 and 15);
- gate and data lines (2 and 7) arranged to across with each other on the substrate (1) to define a pixel region;
- liquid crystal layer (14) between the first and second substrates (1 and 15);
- pixel electrode (12) on the substrate (1) (concerning claim 10);
- common electrode (18) on the substrate (15) (concerning claim 10);
- first and second alignment layers (13 and 19) having opposite rubbing directions on the first and second substrates (1 and 15) for causing liquid crystal molecules in the liquid crystal layer to form at least two domains having different liquid crystal alignment directions in the pixel;
- between the adjacent pixel electrode (12, 12a) having a slit that is an electric field distorting means on a domain boundary of the pixel on a substrate, and

the electric field distorting means being parallel to the boundary between the two domains (concerning claim 10), as a result, a linear disclination is formed at the boundary between the two domains when a vertical electric field is formed between the common electrode and the pixel electrode;

- the slit (electric field distorting means) is formed at the pixel electrode (12) (concerning claim 11);
- the slit (electric field distorting means) is formed at the common electrode (18) (concerning claim 12).

Numano does not explicitly teach having at least two electric field distorting means on a domain boundary of the pixel wherein the two electric field distorting means extend to edges of the pixel region.

Sibahara teaches (col.4, line 43 – col.5, line 8; Figs.7A and 7B) that openings (71 or 72) functions as the at least two electric field distorting means on a domain boundary of the pixel region wherein such two electric field distorting means extend to edges of the pixel region as shown in Figs.7A or Fig.7B. Sibahara further teaches such pixel electrode would stabilize the region of the discontinuity of orientation of liquid crystal (see col.4, lines 43-47).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify multi-domain liquid crystal display of Numano with the teachings of having at least two electric field distorting means (openings) on a domain boundary of the pixel wherein the two electric field distorting means extend to edges of the pixel region as taught by Sibahara, since the skilled in the art would be motivated for

Art Unit: 2871

stabilizing the region of the discontinuity of orientation of liquid crystal (see col.4, lines 43-47).

Regarding claims 6 and 17, Numano teaches (col.16, line 3 – col.17, line 17; Figs. 21-23) that thin film transistor and pixel electrode (12) are formed on the substrate (1).

3. Claims 3-4, 7-9, 14-15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numano and Sibahara as applied to claims 1-2, 5-6, 10-13 and 16-17 above, and further in view of US 6,710,837 B1 (Song et al).

Regarding claims 3-4 and 14-15, Numano and Sibahara teach the invention set forth above except for that the electric field distorting means comprising a protrusion.

Song teaches (col.5, lines 13-62; Fig.3B) that a linear protrusion (5) is formed on the substrate (1), such that the liquid crystal molecules (3) having two domains, and that compensate the viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display of Numano and Sibahara with the teachings of forming protrusion as taught by Song, since the skilled in the art would be motivated for enlarge the viewing angle as forming protrusion would compensate the viewing angle by the two domains of the liquid crystal molecules (col.5, lines 13-21).

Regarding claims 7-9 and 18-20, Numano teaches (col.16, line 3 – col.17, line 17; Figs. 21-23) that the tin film transistor (TFT) having gate electrode, gate insulating layer (4) on gate electrode, semiconductor layer (5) on gate insulating layer (4), source/drain electrode (such as 8) on semiconductor layer (5); and color filter (17),

Art Unit: 2871

black matrix (16), common electrode (18) are formed on substrate (15); and the black matrix (16) is formed on the boundary of the two domains.

Response to Arguments

4. Applicant's arguments filed on September 26, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that no reference teaches or suggests the features recited in the amended claims 1 and 10 wherein the two electric field distorting means extend to edges of the pixel region, it is respectfully pointed out to applicant that Sibahara reference teaches (col.4, line 43 – col.5, line 8; Figs.7A and 7B) that openings (71 or 72) functions as the at least two electric field distorting means on a domain boundary of the pixel region wherein such two electric field distorting means extend to edges of the pixel region as shown in Figs.7A or Fig.7B, and such pixel electrode would stabilize the region of the discontinuity of orientation of liquid crystal, and that would render obvious.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mike Qi
October 31, 2006


ANDREW SCHECHTER
PRIMARY EXAMINER